

STATUS OF THE CLAIMS

1. (Previously presented) A method for providing an initial rasterizing point, comprising:

receiving vertex data corresponding to the vertices of a primitive, the vertex data including x-coordinate and y-coordinate position information;

sorting the vertex data in coordinate-dependent fashion;

generating region bits representing the location of the sorted vertex data with respect to a current tile being rendered;

generating coordinate data representing an initial rasterization starting point estimate when the region bits indicate that at least one of the sorted vertex data lies within the current tile being rendered and discarding the sorted vertex data of primitives that lie outside the boundary of the current tile being rendered; and

providing the initial rasterization starting point estimate to a rasterizer.

2. (Previously presented) The method of Claim 1, further comprising:

generating an orientation bit representing an orientation of a line connecting the first and second vertices of the sorted primitive with respect to a line connecting the first and third vertices of the sorted primitive before generating the initial rasterization starting point coordinates.

3-13. (Cancel)

14. (Previously presented) A circuit, comprising:

a sorting circuit operative to provide sorted vertex data in response to input data corresponding to vertices of a primitive, the vertex data being sorted in a coordinate-dependent fashion, the vertex data including x-coordinate and y-coordinate position information;

a region calculation circuit, coupled to the sorting circuit, operative to receive the sorted vertex data and to generate region bits representing the location of the sorted vertex data with respect to a current tile being rendered; and

an initial rasterization starting point circuit, coupled to the region calculation circuit, operative to generate an initial rasterization starting point coordinate in response to the region bits, the initial rasterization starting point circuit including a discard circuit operative to discard the vertex data of a primitive that lies outside the boundary defined by the current tile.

15. (Previously presented) The circuit of Claim 14, wherein the initial rasterization starting point circuit further includes a trivial accept circuit operative to provide the actual coordinates of the primitive as the initial rasterization starting point in response to the region bits.

16. (Previously presented) The circuit of Claim 15, wherein the vertex data is sorted in y-coordinate fashion and the trivial accept circuit provides the x-coordinate and sorted y-coordinate rasterization starting point of a non-discarded primitive.

17. (Previously presented) The circuit of Claim 14, wherein the vertex data includes x-coordinate position data and y-coordinate position data and further including an intercept calculation circuit operative to generate the initial rasterization starting point when the x-coordinate position data or the y-coordinate position data intercepts the boundary defined by the region bits.

18. (Previously presented) The circuit of Claim 17, wherein the boundary interception point generated by the intercept calculation circuit represents the initial rasterization point starting point coordinate.

19. (Previously presented) The circuit of Claim 14, further comprising an interception calculation circuit operative to provide a coordinate dependent initial rasterization starting point in response to the region bits and the sorted vertex data.

20. (Previously presented) The circuit of Claim 15, wherein the trivial accept circuit further comprises a logic gate coupled to a corresponding subset of the region bits.

21. (Previously presented) The circuit of Claim 20, wherein the logic gate is an AND gate.

22. (Previously presented) The circuit of Claim 14, wherein the region bits define the top edge, bottom edge, right edge and left edge of a current tile being rendered.

23. (Previously presented) The circuit of Claim 14, wherein the discard circuit further comprises a first AND gate having an output and inputs coupled to data representing the right most boundary of the current tile being rendered; a second AND gate having an output and inputs coupled to data representing the left most boundary of the current tile being rendered; and an OR gate having a first input coupled to the output of the first AND gate, a second input coupled to the output of the second AND gate, a third input coupled to data representing the top most boundary of the current tile and a fourth input coupled to data representing the bottom most boundary of the current tile, wherein the output of the OR gate provides a signal indicating whether the sorted vertex data lies within the current tile being rendered.

24. (Previously presented) The circuit of Claim 17, wherein the intercept calculation circuit clamps the x-coordinate and y-coordinate of the initial rasterization starting point to the boundary intercept points.

25. (Previously presented) The circuit of Claim 14, further including an orientation circuit, coupled to the region calculation circuit, operative to generate an orientation bit representing an orientation of a line connecting the sorted first and second vertices with respect to a line connecting the sorted first and third vertices.

26. (Previously presented) The circuit of Claim 14, further including a comparator circuit operative to determine the relative positioning between the vertices of the primitive and the current tile being rendered.

27. (Previously presented) A circuit for optimally determining an initial rasterization starting point, comprising:

a sorting circuit operative to provide sorted vertex data in response to input data corresponding to vertices of a primitive, the vertex data being sorted in a coordinate-dependent fashion, the vertex data including x-coordinate and y-coordinate position information;

a region calculation circuit, coupled to the sorting circuit, operative to receive the sorted vertex data and to generate region bits representing the location of the sorted vertex data with respect to a current tile being rendered; and

an initial rasterization starting point circuit, coupled to the region calculation circuit, operative to generate an initial rasterization starting point coordinate when the region bits indicate that at least one of the sorted vertex data lies within the current tile, the initial rasterization starting point circuit including a discard circuit operative to discard the vertex data of primitives whose vertices lie outside the boundary defined by the current tile.

28. (Previously presented) A method, comprising:

(a) receiving a pixel tile containing vertex position data for a plurality of primitives;

(b) sorting the primitives in axis-dependent order;

(c) determining whether the sorted primitives are positioned within a current tile to be transmitted to a rasterizer; and

(d) determining an initial rasterization point within the sorted primitive.

29. (Previously presented) The method of Claim 28, wherein the position data includes x-coordinate and y-coordinate position data, and the sorting step comprises arranging the position data in y-coordinate order.

30. (Previously presented) The method of Claim 29, wherein the primitives are arranged in descending y-coordinate order.

31. (Previously presented) The method of Claim 29, wherein the primitives are arranged in ascending y-coordinate order.

32. (Previously presented) The method of Claim 28, wherein the position data includes x-coordinate and y-coordinate position data, and the sorting step comprises arranging the position data in x-coordinate order.

33. (Previously presented) The method of Claim 32, wherein the primitives are arranged in descending x-coordinate order.

34. (Previously presented) The method of Claim 32, wherein the primitives are arranged in ascending x-coordinate order.

35. (Previously presented) The method of Claim 28, wherein the position data includes x-coordinate and y-coordinate position data and the position determination step (c) further comprises:

(c1) comparing the x-coordinate position data with the corresponding coordinate position data of the current tile; and

(c2) discarding the primitive when the x-coordinate position is greater than the largest corresponding coordinate position of the current tile.

36. (Previously presented) The method of Claim 28, wherein the position data includes x-coordinate any y-coordinate position data and the position determination step (c) further comprises:

(c3) comparing the x-coordinate position data with the corresponding coordinate position data of the current tile; and

(c4) discarding the primitive when the x-coordinate position is less than the smallest corresponding coordinate position of the current tile.

37. (Previously presented) The method of Claim 28, wherein the position data includes x-coordinate and y-coordinate position data and the position determination step (c) further comprises:

(c5) comparing the y-coordinate position data with the corresponding coordinate position data of the current tile; and

(c6) discarding the primitive when the y-coordinate position is greater than the largest corresponding coordinate position of the current tile.

38. (Previously presented) The method of Claim 28, wherein the position data includes x-coordinate and y-coordinate position data and the position determination step (c) further comprises:

(c7) comparing the y-coordinate position data with the corresponding coordinate position data of the current tile; and

(c8) discarding the primitive when the y-coordinate position is less than the smallest corresponding coordinate position of the current tile.

39. (Previously presented) The method of Claim 28, wherein the initial rasterization determination step (d) further comprises:

(d1) generating an initial x-coordinate and an initial y-coordinate based on the corresponding x-coordinate and sorted y-coordinate of the primitive within the current tile.

40. (Previously presented) The method of Claim 39, wherein the initial rasterization determination step (d) further comprises:

(d2) generating the initial x-coordinate and y-coordinate based on the boundary region of the current tile.